

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. (Currently Amended) A method of forming a spin valve sensor, comprising:
2 forming a first pinned layer with a top surface, bottom surface and sides orthogonal to
3 the top and bottom surface and having a first magnetic orientation and a first width;
4 forming a second pinned layer with sides orthogonal to the top and bottom surface of
5 the first pinned layer and having a second magnetic orientation anti-parallel to the first
6 magnetic orientation and a second width; and
7 forming a sensing layer with sides orthogonal to the top and bottom surface of the
8 first pinned layer and having a ~~second~~ third width smaller than the first width; and
9 forming a spacer layer with sides orthogonal to the top and bottom surface of the first
10 pinned layer and having a width equal to the second width;
11 wherein the third width is selected to coincide with a predetermined track width, the
12 first width being selected to be wider than the predetermined track width.

1 2. (Withdrawn) The method according to Claim 1, further comprising forming
2 a coupling layer disposed between the first and second pinned layers.

1 3. (Withdrawn) The method according to Claim 2, wherein the first and second
2 pinned layers are formed with substantially equal thickness.

1 4. (Withdrawn) The method according to Claim 3, wherein forming the first
2 and second pinned layers creates self-pinned magnetic orientations.

1 5. (Withdrawn) The method according to Claim 3, further comprising
2 depositing an anti-ferromagnetic material (AFM) adjacent to the first pinned layer, wherein a
3 thickness of the AFM creates exchange coupling between the AFM and the first pinned layer.

1 6. (Original) The method according to Claim 1, wherein forming the sensing
2 layer includes:
3 forming a free layer having a third magnetic orientation orthogonal to the first
4 and second magnetic orientations;
5 forming a bias layer in proximity to the free layer having a fourth magnetic
6 orientation anti-parallel to the third magnetic orientation; and
7 forming an AFM layer adjacent to the bias layer, wherein exchange coupling
8 between the AFM layer and the bias layer sets the fourth magnetic orientation.

1 7. (Original) The method according to Claim 6, wherein the bias layer is
2 formed with a thickness greater than a thickness of the free layer.

1 8. (Currently Amended) The method according to Claim 1, wherein the second
2 pinned layer is formed with a width substantially equal to the ~~second~~ third width.

1 9. (Original) The method according to Claim 8, wherein insulating layers are
2 disposed on both sides of the second pinned layer.

1 10. (Original) The method according to Claim 1, wherein the second pinned
2 layer is formed with a width substantially equal to the first width.

- 1 11. (Original) The method according to Claim 1, wherein insulating layers are
- 2 disposed on both sides of the sensing layer.